DOCUMENT RESUME

ED 249 190 SP 025 192

AUTHOR Galluzzo, Gary R.
TITLE A Study of Student-Teacher Thinking.
PUB DATE 26 Apr 84
NOTE 15p.; Paper presented at the Annual Meeting of the American Educational Research Association (68th, New Orleans, LA, April 23-27, 1984).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Cognitive Processes; Decision Making; Educational Research; Elementary School Teachers; Higher Education; *Learning Activities; *Learning Strategies; Preservice Teacher Education; Student Attitudes; *Student Teacher Attitudes; *Student Teachers

ABSTRACT

A study used an information-processing model to examine the thoughts of student teachers during the act of teaching. A review of related research on teacher information-processing included studies by Marland (1977), McNair and Joyce (1978), and Morine and Vallance (1975). The study used the method and categories of concerns of McNair and Joyce who, in their study of elementary school teachers, identified major concerns of inservice teachers: (1) pupil learning, attitudes, and behavior; (2) lesson content; (3) procedures; (4) instructional materials; and (5) time block restrictions. These teachers' major concerns were pupil learning and learning tasks, followed by pupil attitudes. Ten elementary school level student teachers participated in the study. Lessons taught by the subjects were videotaped, and stimulated recall interviews were conducted during replaying of the tapes. The student teachers' greatest concerns were pupil learning and pupil attitudes, followed by tasks or learning activities. Results are analyzed in terms of implications for teacher education. (JD)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
X This document has been reproduced as received from the person or organization originating it.
Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Gary R. Galluzzo
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

A STUDY OF STUDENT-TEACHER THINKING

Gary R. Galluzzo
Glassboro State College

Paper Presented at American Education Research Association
New Orleans, April 26, 1984

ED249190

The research and literature on how teachers think, or process information, has been growing over the last five years. Underlying this approach to research on teaching is the assumption that how teachers are behaving is somehow related to or affected by what they are thinking (Brophy, 1980). Most research on teacher thinking has primarily focused on the practicing professional, or inservice teacher (Marland, 1977; McKay and Marland, 1978; McNair and Joyce, 1978; Morine and Vallance, 1975). The purpose of this paper is to extend research on teacher thinking to preservice teacher education in an effort to examine student-teacher thinking.

A Framework

Providing the framework for this study is a distinction made by Clark (1978). Clark writes that two models for research on teacher thinking dominate in the literature. They are the decision-making model and the information-processing model.

In the decision-making model, "the teacher is seen as someone who is constantly assessing situations, processing

SP 025 192

information about those situations, making decisions about what to do next, guiding action on the basis of those decisions, and observing the effects of the actions on students" (p.3). He cites the work of Shavelson (1976) as representative of the type of research conducted that employs the decision-making model.

The information-processing model is characterized by Clark as focusing "much less on the decisions that teachers must make" and describing "the teacher as a person who, faced with a very complex task environment, copes with that environment by simplifying it..." (p.3). He cites a study conducted by Marland (1977) as using the information-processing model.

The study reported in this paper employed the information-processing model to examine the thoughts of student-teachers in the interactive setting, that is, during the act of teaching. The most common method used for gaining access to teachers' thoughts is stimulated recall. Stimulated recall is a self-report procedure in which a videotape of a teacher (in the act of teaching) is replayed to him/her to stimulate recall of his/her thoughts during the lesson. The videotape is stopped periodically and the teacher is interviewed by the researcher. A review of related research follows.

Related Research

Studies of teacher information-processing in the interactive setting are few. Recent research by Marland (1977), McNair and Joyce (1978), and Morine and Vallance (1975) have applied the information-processing model.

In their study of forty second- and fifth-grade teachers, Morine and Vallance identified three major types of decisions discussed by the teacher during the replay and interview session. They were: 1) interchanges (decisions relating to instantaneous verbal interaction), 2) planned activities (interactive decisions directly related to preactive decisions made during lesson planning), and 3) unplanned activities (decisions to include an activity that was not originally part of the lesson plan). They found that nearly all of the decisions were categorized as either interchange or planned decisions (97%). Furthermore, additional findings show that these teachers made more references to cognitive aspects of the lesson than to affective aspects.

Marland (1977) also studied the interactive thoughts of a volunteer group of six elementary-level teachers. These six teachers went through the stimulated recall procedure. Marland coded the interview protocol using an eleven-category system developed for his study. He found that the teachers' thoughts while teaching served four major functions: 1) correcting or adjusting the lesson, 2)

dealing with unpredictable parts of the lesson, 3) teacher self-regulating of behavior, and 4) adapting instruction to individual students.

McNair and Joyce (1978) studied the thought processes of ten elementary school teachers. They also used stimulated recall of reading lessons over the length of the school year. As the teacher and researcher watched the videotape replay of the lesson, the researcher stopped the tape, and instructed the teacher to stop the tape whenever she/he recalled what she/he was thinking. Analysis of the interview protocols led to five categories of teacher concerns (Figure 1). The numbers in parentheses at the end of each category indicate the percentage of total concerns for each category in the McNair and Joyce study.

FIGURE 1

Categories of Concerns of Teachers (McNair and Joyce, 1978)

Pupil

Pupil Learning: This encompasses teacher concern with a group of students or an individual student's acquisition of factual information, concepts or theories being presented in the lesson. The concern could arise out of a general tendency for the student to be a slow or a fast learner, or it could come from a more immediate response to the particular lesson. For example, one teacher commented, "I knew she had it so I decided not to discuss it any further." Another teacher remarked, "He has a lot of trouble with his sounds, so though he seemed to have the idea, I decided to drill a little more." (23.2%)

Pupil Attitudes: This includes those areas of concern that touch upon the more affective aspects of student response. These kinds of concerns can be with a student's

tendency to maintain a particular attitude or with an immediate exhibition of a specific attitude. One teacher commented, "This little girl is shy and very sensitive. That's why I decided to call on other students after she gave me that answer, to make less of the fact that she didn't have it right." Several teachers mentioned the following: "He wasn't paying attention so I decided to call on him." (10.3%)

Pupil Behavior: This refers to concerns that center upon how a student acts in the classroom. These concerns could be founded on a student's reputation for behaving or misbehaving, or they could result from the immediate situation. For instance, one teacher noted, "He is likely to poke and bother the person next to him, so I decided to put him next to me." Or, as another teacher explained, "They were more excitable than usual today, so I tried not to let them get away with anything." (5.6%)

Lesson Content

Task: This addresses those concerns that relate to the learning activity in which the students are engaged. It includes such statements as "I at first wanted them to write their own stories, then changed my mind and had them write a group story." (15.1%)

Facts and ideas: This includes those instances when a teacher focuses on a concept she wants the children to obtain from the lesson. A typical example of this type of concern would be the statement, "That's a difficult idea for kids this age, so I decided to take a little longer with it." (13.6%)

Objectives: This refers to concerns with the mastery of knowledge and skills developed in the lesson. The comment, "I hadn't thought about it, but one of the things I wanted them to be able to do was rely on themselves. So instead of spelling a word for them, I had them look it up themselves," is a representative of this category. (3.0%)

Procedures

Directions: This includes concerns that pertain to what the students are supposed to do to accomplish the task in the lesson. They may be as simple as, "Read pages 100-110 in your reader," or as complex as an explanation of how to do a crossword puzzle. A teacher exhibiting this concern might say, "When I gave the directions, they weren't clear, so I decided to do the first one as an example." (7.0%)

Scheduling: This refers to those concerns that pertain to the order in which things happen during a lesson. A lesson may include more than one activity (e.g., individual seat work followed by a group reading session), or an activity may have several parts (e.g., a vocabulary review, a question and answer review of the study, and board work). A concern during the lesson with the order in which these occur would fall into this category. For example, one teacher commented, "Instead of discussing the story and then doing a vocabulary lesson on the board, today I decided to do it the other way around." (2.4%)

Modifications: This encompasses those concerns that pertain to specific deviations from the normal routine. Normal (or usual) is the key word here. A concern of this nature would be, "Usually, I have the children take turns and answer individually, but I decided to see what would happen if I let them answer as a group." (4.4%)

Time

Pacing: This refers to those concerns which relate to the speed at which material is being presented, the flow of teacher questions and student response, the amount of "wait time" allowed, and the amount of time students are disengaged from tasks. An example of this type of concern is the following comment, "I gave them the answer myself because I felt things were moving too slowly. I was losing their attention." (2.2%)

Time-Block Restriction: Included here are those concerns that focus on accomplishing a certain amount by the end of the period in which the lesson is taking place. For instance, "I wanted to finish the story by the end of the lesson, so I asked fewer questions between sections." (3.0%)

Time-Related Goals: This refers to those concerns having to do with long-range expectations for things like the amount of material presented, the number of assignments completed, and the number of pages done in a workbook. An example of this sort of concern is, "I skipped enrichment work today, and we worked in their workbook so it'd be done by winter vacation." (1.4%)

Materials

Instructional Systems: This addresses concerns that relate to the various approaches to instruction involving standard textbooks, workbooks, charts, flash cards, and other teaching materials packaged and marketed on a wide scale. For instance, such a concern is, "It's important that we work on the correct chart, so I decided to go to my

desk and check it." (6.1%)

Teacher-Developed Aids: This includes those concerns that focus on materials the teacher had made, purchased or altered to enhance a lesson: things such as a vocabulary game created by the teacher, special flash cards tailored to each individual student's needs, special dittoed worksheets. As an example, one teacher commented, "I hoped that the children would like the game, but I decided it was too distracting so I put it away." (2.7%)

The teachers mentioned pupil learning as the greatest concern (23.3%) with learning tasks (15.1%), fact and ideas (13.6%), and pupil attitudes (10.3%) following.

As stated earlier, research on teacher thinking has been limited to the studies of practicing professionals. The study described in this paper used the methods and categories of McNair and Joyce to examine the thought processes of student-teachers.

Methods

The method used in this study is drawn from McNair and Joyce. Ten elementary-level student-teachers were selected to participate in this investigation. Two of the ten taught first grade, six taught third grade, and two taught sixth grade. All of the student-teachers were asked to teach a language arts lesson. The ten student-teachers taught the lesson during the last two weeks of student-teaching. The lesson was videotaped by the researcher. As soon as possible after the lesson, the researcher and the student-teacher played the videotape and the stimulated recall interview began. The researcher stopped the

videotape four times: 1) the first time a student responded incorrectly to a question; 2) when the teacher shifted the activity in which the pupils were engaged; and 3) and 4) at the two randomly selected points. At the conclusion of the first playing, the tape was rewound and played again. This time the student-teacher was instructed to stop the tape any time she recalled her thoughts. The interview sessions were recorded on audiotape, which served as the data for this study.

When the tape was stopped either by the researcher or the teacher, the researcher asked the following questions:

1) What were you thinking at this point?

2) What did you notice that made you stop and think?

Probe: Was there anything the pupils were doing that made you stop and think?

3) What did you decide to do?

4) Was there anything else you thought of doing at that point, but decided against?

5) What was it?

Because of the limited time available for student-teachers to assume full responsibility for the classes they teach, these student-teachers were videotaped only once and interviewed twice. In contrast, McNair and Joyce conducted six interviews over the course of the school year.

Results

The student-teachers generated ninety-four concerns during the stimulated recall interviews. They are presented in Table 1.

Table 1
Frequency and Percentage of Concerns Mentioned by Student-Teachers

Category	Number of Concerns	% Total
Pupil	50	
Learning	22	23.4
Attitudes	22	23.4
Behavior	6	6.4
Content	24	
Tasks	18	20.2
Facts & Ideas	3	3.2
Objectives	3	3.2
Procedures	14	
Directions	5	5.3
Modifications	2	2.1
Scheduling	7	7.4
Materials	2	
Instructional Systems	1	1.1
Teacher Developed Aids	1	1.1
Time	4	
Time Block Restrictions	1	1.1
Pacing	2	2.1
Time-Related Goals	1	1.1
TOTAL	94	100.0

As Table 1 shows, pupil learning (23.4%) and pupil attitudes (23.4%) were the greatest concerns. There were no major pupil behavior problems during the videotaped lessons which may explain the relatively few concerns about pupil behavior. The tasks or learning activities in which the

pupils were involved were the third greatest concern of these student-teachers (20.2%).

Conspicuous by their absence from the results of this investigation are the numerous other concerns mentioned by the teachers in the McNair and Joyce study. These student-teachers did not mention modifying the lesson or pacing the lesson, the facts and ideas in the content of the lesson, achieving the objectives they wrote in their plans, or the materials they used in the lesson as concerns while they were teaching.

It would be easy to assume that the student-teachers did not think during the lesson, since they reported only ninety-four concerns and over two-thirds of them related to the pupils and the learning activities. In contrast, it seems that most of the decisions regarding instruction were made in the preactive, or lesson planning, phase. These student-teachers selected the content, the materials, the delivery format, and the pupils' tasks in the preactive phase of teaching. Nearly all of the decisions they made afterward concerned keeping the lesson on-track or alive, and maintaining the climate and the learning tasks to assure that all pupils were motivated and participating.

Three implications can be drawn from this research. The first relates to the supervision of student-teachers, the second to teacher development, and the third relates to future research. Each are briefly discussed.

The results of this study indicate that these student-teachers were, in Piagetian terms, "concrete-operational." They were relatively inflexible in their ability to move away from the lesson-as-planned and they seemed to lack a spirit of experimentation, an assumption on which the student-teaching experience is based. This is not to imply that the lessons were taught poorly. It is to state, however, that these student-teachers valued the lesson proceeding as each had planned it to proceed, and they valued having a successful teaching experience. If, as these results seem to indicate, student-teachers are concrete-operational regarding teaching, then supervisors and cooperating teachers are in a position to provide direction to the beginning teacher. Student-teachers can be encouraged to try small-scale diversions from the lessons, in a controlled (supervised) setting; for example, planning a lesson that should fail to achieve its objectives. The lesson could then be video-taped and followed up with a stimulated recall procedure in which the student-teacher observes his/her behavior and discusses his/her concerns about the lesson. This may help the student-teacher develop rather than adopt his/her teaching style.

The second implication relates to teacher development. The distribution of concerns that were generated by these student-teachers were different from those in the McNair

and Joyce study. Although the inservice teachers did mention pupil attitude (10.3%) as a concern, it ranked well behind pupil learning (23.2%). The student-teachers in this study gave equal weight to pupil learning and pupil attitude (23.4%) demonstrating somewhat greater concern for pupil affect than did the inservice teachers, but equal concern for pupil learning. The literature on teacher thinking is scant and the research results are sketchy and certainly not conclusive. However, by comparing the findings of this study with those of McNair and Joyce, there may be an indication that teachers experience a general pattern of growth and development. In this case the shift may be away from pupil attitude and toward pupil learning. However, much more research needs to be conducted to identify any pattern of teacher development as indicated by teacher thinking. This leads to the final implication: the need for future research on teacher and student-teacher thinking.

Beyond the need for research on teacher thinking as a developmental process, there is also a need for a better characterization of student-teacher thinking. The subjects in this study were all student-teachers from the same institution and their concerns may reflect the values of their teacher education curriculum. Perhaps their preparation program emphasized, or even over-emphasized, pupil attitude. Or, it may be that student-teachers are

characteristically concerned with maintaining a positive attitude among the pupils, and as they become more experienced teachers, they shift their concerns away from pupil attitude and more toward pupil learning. A second press may occur during student-teaching where student-teachers are expected to have meticulously-planned lessons and where diversion from the plan is discouraged, as it may result in ineffective instruction.

A note about method is important. It is quite possible that there is an observer effect in this study. Student-teachers are not typically videotaped at this institution. Even though the researcher was not the college supervisor, the videotaping session could have forced the student-teachers to plan active, involved lessons. In other words, the student-teachers taught an uncharacteristic lesson because of their participation in a study such as this one. Nevertheless, little is known on how students become teachers. Research on teacher thinking is a growing body of knowledge. There is little research on teacher development. There may be value in joining these two areas of inquiry to examine the initial preparation and professional development of teachers through the information-processing and decision-making models of teacher thinking.

References

Brophy, J.E. (1980) Teachers' cognitive activities and overt behaviors (Occasional Paper #39). East Lansing: Institute for Research on Teaching, Michigan State University.

Clark, C.M. (1978) Choice of model for research on teacher thinking (Research Series #20). East Lansing: Institute for Research on Teaching, Michigan State University.

MacKay, D.A. & Marland, P.W. (1978) Thought processes of teachers. Paper presented to the Annual Meeting of the American Educational Research Association, Toronto.

Marland, P.W. (1977) A study of teachers' interactive thoughts. Unpublished doctoral dissertation, the University of Alberta.

McNair K. & Joyce, B.R. (1978) Teachers' thoughts while teaching: The South Bay study. (ERIC Document Reproduction Service No. 191797.

Morine, G., & Vallance, E. (1978) Special Study B: A study of teacher and pupil perceptions of classroom interaction. (BTES Tech. Rep. 75-11-6). San Francisco: Far West Laboratory for Educational Research & Development.